

Toward a New Epistemology for Medical Science

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ABSTRACT: The use of race remains common at all levels of medical science and practice, including education, research, and care delivery. There are ongoing vigorous debates about the validity of the manner in which race is used. Unfortunately, when one looks closely at the manner in which race is used, what one often finds is in fact racism. This article explores some of the ways in which the development of the concept of race as a biological construct, was used to justify racism, and shaped the early development of scientific thought. This historical perspective is used to elaborate the ways in which those seminal ideas continue to distort medical research, education, and care delivery, and perpetuate health disparities.

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In the general theory of relativity, Albert Einstein contended that because of gravity, massive bodies have the ability to curve space (and time). Space is distorted and time does not flow at the same rate in the presence of large gravitational forces. Racism has had a similar effect on the structure of the science, as well as the practice of medicine that has gone unaddressed for far too long.

What we take as settled Western science and knowledge is, to a considerable degree, the byproduct of the norms and practices that underscore social or public thought. Racism has been (and continues to be) an integral part of social and public thought. As such, the way science and medicine see the world requires reconsideration of fundamental assumptions that include the bearing of racism on reasoning. In the absence of revolutionary thinking, the structure of scientific research and

scholarship is referential. New information is built and evaluated on the scaffold of old knowledge and its acceptance is predicated on the extent to which it reinforces those references to prior knowledge. The requirement of presenting new information in the context of prior knowledge represents a de facto expectation that the soundest of ideas emerge from the frame of existing ideas. In its most extreme expression, new knowledge becomes derivative of, and is potentially distorted by the gravitational force of older ideas.¹

One glaring example of this distortion is the fact that despite the work of thinkers like Franz Boas in the early part of the 20th century that challenged the biological basis of race and stressed the importance of the social environment, it was not until the latter part of the century (with strong evidence from social epidemiology) that factors that are now

recognized as social determinants of health began to gain currency.² Prior to this, health disparities were all too often attributed to the decisions and behavior of individuals and communities. Such conclusions were the product of empirical evidence distorted by deeply-engrained prejudice and racism. The historical mass of racism, in particular, exerts a strong gravitational pull and distorts how we conduct scholarship and develop new knowledge, and ultimately, how we diagnose and treat disease, and promote the health and well-being of individuals and populations.

In the basic and clinical sciences, the structure of old knowledge, and the culture in which it arises, exert a strong gravitational pull on newly developed knowledge. Scholars look at the Enlightenment as a period of great intellectual awakening. Enlightenment philosophers such as John Locke and Immanuel Kant gave us ideas of human freedom, individual rights, the principles of liberal democracy on which our nation was founded, the concept of original thought, empiricism, and the scientific method. They also used their revolutionary ideas of natural law, empiricism, and scientific inquiry to promote oppressive social policies and develop a hierarchy of race—a hierarchy based on phenotypic expression that created a rationale for

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White supremacy, a hierarchy that provided justification for the extermination of indigenous peoples and promotion of chattel slavery. The extent to which the racism of Enlightenment philosophers tainted their other contributions continues to be extensively debated.³ However, there is no doubt that the concept of race continues to distort medical knowledge and practice to this day, to the detriment of the health and well-being of People of Color.

John Locke was one of the authors of the *Fundamental Constitutions of Carolina*. This document proposed a feudal system of government for the colony that became North and South Carolina. This document legalized White supremacy, and normalized slavery.⁴ Locke authored a particular provision that specifically prevented slaves from gaining their freedom by converting to Christianity. It states:

Since charity obliges us to wish well to the souls of all men, and religion ought to alter nothing in any man's civil estate or rights, it shall be lawful for slaves as well as others, to enter themselves, and be of what church or profession any of them shall think best, and thereof be as fully members as any freeman. But yet no slave shall hereby be exempted from that civil dominion his master hath over him, but be in all other things in the same state and condition he was in before.⁵

A few sections later, the document further emphasizes, "Every Freeman of Carolina shall have absolute Power and Authority over his Negro Slaves, of what Opinion or Religion soever."⁶ For John Locke, White supremacy became the way to resolve the inherent contradictions between liberal democratic principles and colonial capitalism and its reliance on slave labor. The ideas of the Enlightenment philosophers gave voice to secularism, reason, and scientific

thought, which in turn were used to justify chattel slavery. Natural law, through its application as a hierarchical structure, only freed some men. Those conveniently deemed inferior, it bound to heritable exploitation.

There are also numerous examples of Immanuel Kant's racism. In his work in anthropology, he used many newly-developed scientific ideas to support the superiority of Whites and the inferiority of other populations. He contended, "The white race contains all the motivating forces and talents within itself."⁷ He also stated,

Humanity exists in its greatest perfection in the white race. The yellow Indians have a smaller amount of talent. The Negroes are lower and the lowest are a part of the American peoples.⁸

On a more practical level he advised,

To beat slaves effectively 'a cane but it has to be a split one, so that the cane will cause wounds large enough that prevent suppuration underneath the negroes thick skin.⁹

We find another example of the pollution of science by racism in the development of statistics. Early fathers of statistics such as Karl Pearson, who gave us the Pearson correlation coefficient, and Ronald Fisher who developed the concept of statistical significance, were both eugenicists. They both actively and aggressively used this newly developed science to support eugenics. With the calculation of statistical significance, Fisher took the simple demonstration of mathematically-supported associations or dissimilarities between variables and elevated them to the status of causality. He used mathematical equations to project a veneer of objectivity on the "science"

of eugenics. Fisher and Pearson used mathematics to support preexisting ideas of differences between populations of humanity. However, the fact that one has measured something does not mean that the conclusions drawn are the truth, and the inability to measure something does not guarantee that no difference exists. Empiricism and objectivity are not synonyms. Objectivity will never be found in mathematical equations, no matter how refined. Of note is the fact that in 2016 the American Statistical Association (ASA) issued a cautionary statement regarding the value of statistical significance. In part the statement read, "By itself, a *P* value does not provide a good measure of evidence regarding a model or hypothesis."¹⁰ The ASA contended that the establishment of homogeneity or inhomogeneity in data is not a sound scientific exercise.

It should be noted that, just as Fisher made the leap from correlation to causality, we continue to do the same in the practice of medicine on a daily basis. The use of race-based diagnostic and treatment algorithms provide a convenient example. The Society of Thoracic Surgeons uses a calculator to estimate the risk of complications including death to evaluate patients. The calculator considers race, based on observations of differences in outcomes between Black and non-Black patients. The consideration of race places Black patients at higher risk compared to white patients. Such assessments use observed differences based on race and raise them to the level of causality, in the same manner as Fisher described above. The observed difference correlates with race, so race is presumed to be the cause.¹¹ Another apt example is the calculation of glomerular filtration rate (GFR). The highly suspect presumption that African Americans have a higher muscle mass results in the calculation increasing the

estimated GFR of African Americans.¹¹ Therefore, we treat patients on the basis of observable phenotypic expression and not as individuals, and important issues such as social determinants are completely overlooked. If we consider this same race-based approach in a policing context it would likely be characterized as profiling. In each of these instances the assumption that we can use observed race as a biological distinction to guide care both delegitimizes consideration of the social determinants that may shape an individual's health, but may also mask individual differences that should be more salient. In the practice of medicine we commit these and other ecological fallacies on a daily basis by applying observations made of a group to individuals we associate with that group, to the detriment of the health and well-being of patients.

Epistemology, defined as the way we order knowledge, and how we come to know and understand, is based on certain assumptions, some of which are biological and others that are social. Furthermore, we certainly know that biology is shaped by social influences. Examples include the influence of environment on gene expression, the weathering hypothesis proposed by Arline Geronimus, and telomere shortening and allostatic load in response to social stress.¹² In the final analysis, empiricism is heavily culturally influenced. As Heisenberg stated, "What we observe is not nature itself, but nature exposed to our method of questioning."¹³ His description was of processes at a subatomic level. Nonetheless, it is also true at the level of visible, material phenomena. Randomized controlled trials are designed to eliminate the impact of confounders, many of which may function as social determinants of health outcomes. So, what are we really studying, and how accurate

is our view of nature in this context? Applying Heisenberg's Uncertainty Principle, if we focus on the momentum of a causal process, we neglect the positions of individuals therein, ignoring the "who" of our study. What we study is the disease in the absence of the historical and current social context of patients' experience. We measure weight, treat blood pressure, and monitor serum potassium levels, but for too long race has blinded us to the social determinants that underlie many patients' disease risks and outcomes. Ours is a disease-based approach to health care that views individuals as cases and undervalues the socio-cultural and humanistic aspects of patient care.¹⁴

In science, there is no answer that does not begin with a prior question. If the question is tainted with bias, then reason, mathematics, and statistics have no means of eliminating such a seminal cognitive error. The concept of race and racism have long distorted the development and application of scientific knowledge. It should be noted that unlike gravity, racism is not a fundamental force in nature as we perceive and experience it. Racism is a force that we conjure continuously in our thoughts, words, and deeds. It is imbedded in our politics and basic social structure.

Racism, as is the case with all the other "isms," is rooted in a desire for superiority. Race in turn is the social hierarchy, masquerading as a biological construct, that is used to justify racism. The two cannot be separated. Whenever and wherever we use race, we evoke racism. Therefore, how does the use of race in medicine align with the oath to "not permit considerations of age, disease or disability, creed, ethnic origin, gender, nationality, political affiliation, race, sexual orientation, social standing or any other factor to

intervene between my duty and my patient."¹⁵ The use of race invariably supports and bolsters racism as it results in treating some individuals differently than others on the basis of differential observable phenotypic expression. It results in the daily commission of ecological fallacies, as noted above. As long as race is part of our epistemology, racism will be embedded in our research, education, and clinical practice.

No individual researcher, educator, or clinician has the capacity to affect major changes in the social structure of their nation tomorrow. However, we do have the capacity to eliminate the distortion of racism from the science, teaching, and practice of medicine today. Until we do so, we will not comport ourselves in accordance with the letter or the spirit of the oath to which we have sworn solemnly, freely, and upon our honor.

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